C/I measurement can be mapped to a table and associated with a C/I index. Using more bits to represent the C/I index allows a finer quantization of the C/I measurement. Also, the mapping can be linear or predistorted. For a linear mapping, each increment in the C/I index represents a corresponding increase in the C/I measurement. For example, each step in the C/I index can represent a 2.0 dB increase in the C/I measurement. For a predistorted mapping, each increment in the C/I index can represent a different increase in the C/I measurement. As an example, a predistorted mapping can be used to quantize the C/I measurement to match the cumulative distribution function (CDF) curve of the C/I distribution as shown in FIG. **10**.

Other embodiments to convey the rate control information from mobile station **6** to base station **4** can be contemplated and are within the scope of the present invention. Furthermore, the use of different number of bits to represent the rate control information is also within the scope of the present invention. Throughout much of the specification, the present invention is described in the context of the first embodiment, the use of a DRC message to convey the requested data rate, for simplicity.

In the exemplary embodiment, the C/I measurement can be performed on the forward link pilot signal in the manner similar to that used in the CDMA system. A method and apparatus for performing the C/I measurement is disclosed in U.S. patent application Ser. No. 08/722,763, entitled "METHOD AND APPARATUS FOR MEASURING LINK QUALITY IN A SPREAD SPECTRUM COMMUNICATION SYSTEM," filed Sep. 27, 1996, now U.S. Pat. No. 5,903,554, issued May 11, 1999, by Keith W. Saints, assigned to the assignee of the present invention and incorporated by reference herein. In summary, the C/I measurement on the pilot signal can be obtained by despreading the received signal with the short PN codes. The C/I measurement on the pilot signal can contain inaccuracies if the channel condition changed between the time of the C/I measurement and the time of actual data transmission. In the present invention, the use of the FAC bit allows mobile stations **6** to take into consideration the forward link activity when determining the requested data rate.

In the alternative embodiment, the C/I measurement can be performed on the forward link traffic channel. The traffic channel signal is first despread with the long PN code and the short PN codes and decovered with the Walsh code. The C/I measurement on the signals on the data channels can be more accurate because a larger percentage of the transmitted power is allocated for data transmission. Other methods to measure the C/I of the received forward link signal by mobile station **6** can also be contemplated and are within the scope of the present invention.

In the exemplary embodiment, the DRC message is transmits in the first half of the time slot (see FIG. **7**A). For an exemplary time slot of 1.667 msec, the DRC message comprises the first 1024 chips or 0.83 msec of the time slot. The remaining 1024 chips of time are used by base station **4** to demodulate and decode the message. Transmission of the DRC message in the earlier portion of the time slot allows base station **4** to decode the DRC message within the same time slot and possibly transmit data at the requested data rate at the immediate successive time slot. The short processing delay allows the communication system of the present invention to quickly adapt to changes in the operating environment.

In the alternative embodiment, the requested data rate is conveyed to base station **4** by the use of an absolute reference and a relative reference. In this embodiment, the absolute reference comprising the requested data rate is transmitted periodically. The absolute reference allows base station **4** to determine the exact data rate requested by mobile station **6**. For each time slots between transmissions of the absolute references, mobile station **6** transmits a relative reference to base station **4** which indicates whether the requested data rate for the upcoming time slot is higher, lower, or the same as the requested data rate for the previous time slot. Periodically, mobile station **6** transmits an absolute reference. Periodic transmission of the data rate index allows the requested data rate to be set to a known state and ensures that erroneous receptions of relative references do not accumulate. The use of absolute references and relative references can reduce the transmission rate of the DRC messages to base station **6**. Other protocols to transmit the requested data rate can also be contemplated and are within the scope of the present invention.

XVI. Reverse Link Access Channel

The access channel is used by mobile station **6** to transmit messages to base station **4** during the registration phase. In the exemplary embodiment, the access channel is implemented using a slotted structure with each slot being accessed at random by mobile station **6**. In the exemplary embodiment, the access channel is time multiplexed with the DRC channel.

In the exemplary embodiment, the access channel transmits messages in access channel capsules. In the exemplary embodiment, the access channel frame format is identical to that specified by the IS-95 standard, except that the timing is in 26.67 msec frames instead of the 20 msec frames specified by IS-95 standard. The diagram of an exemplary access channel capsule is shown in FIG. **7**B. In the exemplary embodiment, each access channel capsule **712** comprises preamble **722**, one or more message capsules **724**, and padding bits **726**. Each message capsule **724** comprises message length (MSG LEN) field **732**, message body **734**, and CRC parity bits **736**.

XVII. Reverse Link NACK Channel

In the present invention, mobile station **6** transmits the NACK messages on the data channel. The NACK message is generated for each packet received in error by mobile station **6**. In the exemplary embodiment, the NACK messages can be transmitted using the Blank and Burst signaling data format as disclosed in the aforementioned U.S. Pat. No. 5,504,773.

Although the present invention has been described in the context of a NACK protocol, the use of an ACK protocol can be contemplated and are within the scope of the present invention.

The previous description of the preferred embodiments is provided to enable any person skilled in the art to make or use the present invention. The various modifications to these embodiments will be readily apparent to those skilled in the art, and the generic principles defined herein may be applied to other embodiments without the use of the inventive faculty. Thus, the present invention is not intended to be limited to the embodiments shown herein but is to be accorded the widest scope consistent with the principles and novel features disclosed herein.

The invention claimed is:

1. A method for wireless communications, comprising:

transmitting a pilot signal from a first station, the pilot signal having a fixed spatial pattern and being non-varying over time, independent of measurements made by other stations based on the pilot signal;

periodically receiving information indicative of a quality measure of a wireless channel from a second station, the information being determined by the second station based on the pilot signal from the first station and being